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DEPARTMENT OF COMMERCE

BUREAU OF STANDARDS
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UNITED STATES GOVERNMENT MASTER SPECIFICATION
FOR ASBESTOS HIGH-PRESSURE ROD PACKING

FEDERAL SPECIFICATIONS BOARD SPECIFICATION No. 103a

[Revised June 15, 1925]

This specification was officially promulgated by the Federal Specifications Board on December 29, 1923, for the use of the Departments and Independent Establishments of the Government in the purchase of asbestos high-pressure rod packing.

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I. GRADES

Packing shall be supplied in one grade only.

II. MATERIAL AND WORKMANSHIP

1. Packing shall be made from woven asbestos cloth, treated with a protective coating of rubber compound, wrapped tightly upon itself, in layers. No wire insertion will be permitted.

2. It shall be square and shall be made plain, with a central rubber core, or with a rectangular rubber spring back as specified, and shall be sufficiently pliable to move or flow toward the rod as wear takes place. Packing less than $\frac{3}{8}$ inch in size shall not contain a rubber core or spring back.

3. When the packing is made with a rubber spring back, the outside cover stock shall consist of not less than two complete layers of cloth.

4. Rubber friction shall not be used on the outside of the packing where it will come in contact with the rod.

III. GENERAL REQUIREMENTS

The general requirements shall be as stated in Section IV.

IV. DETAIL REQUIREMENTS

1. The asbestos cloth shall be made as follows: Each strand of the warp and filling shall consist of two asbestos yarns, and the weave shall run not less than 20 strands of warp and not less than 10 strands of filling per linear inch.

2. The yarn shall contain not less than 90 per cent of long fiber asbestos of not less than 12 per cent water of composition.

3. New wild or plantation rubber of best quality shall be used in the spring back, central core, and friction.

4. The compound used for the spring back or central core shall contain not less than 60 per cent by volume of rubber. The total sulphur, exclusive of that contained in barytes, shall not exceed 8 per cent of the weight of rubber as compounded. The rubber compounds shall be free from all substances which might injuriously affect the quality.

5. The packing shall be coiled into helices and vulcanized. The inside diameter of the helix shall be not less than four times nor more than six times the thickness of the packing.

6. Packing with core or spring back shall contain not less than 40 nor more than 60 per cent by weight of rubber compound including the core or spring back, prior to lubrication. Packing without core or spring back shall contain not less than 30 nor more than 50 per cent by weight of rubber compound prior to lubrication.

7. The cross-sectional area of the rubber core or spring back shall not exceed 12 per cent of the nominal cross-sectional area of the packing.

8. The lubrication shall not exceed 20 per cent by weight of the finished packing. Lubrication may be either oil or glycerine.

9. The finished packing shall be dipped in pure flake graphite.

10. When subjected to the action of a saturated steam at 250 lbs./in.² gauge pressure for eight hours, the finished packing shall not harden nor soften materially, and the friction compound shall retain most of its elasticity and strength as indicated by the "tooth" when the plies are separated.

V. METHODS OF INSPECTION AND TEST

1. A sample of untreated cloth 12 inches square shall be taken from each lot.

2. A sample 12 inches long of each size of packing as finished, and also without lubrication or graphite, shall be taken from each 1,000 pounds or less.

VI. PACKING AND MARKING

Each helix of packing shall be wrapped in waxed paper.

VII. ADDITIONAL INFORMATION

1. This packing is suitable for use as a piston rod, valve stem, or slip-joint packing under steam pressures up to 300 lbs./in.² and with a maximum temperature of 700° F.

2. The packing as furnished shall weigh within 5 per cent, plus or minus, of the proposed weights as submitted with the proposals.

VIII. GENERAL SPECIFICATIONS

All tests and analyses shall be made in accordance with the methods described in United States Government General Specifications for Rubber Goods, F. S. B. Specification No. 59a, in effect on date of proposal.

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